York Harbor Quadrangle, Maine

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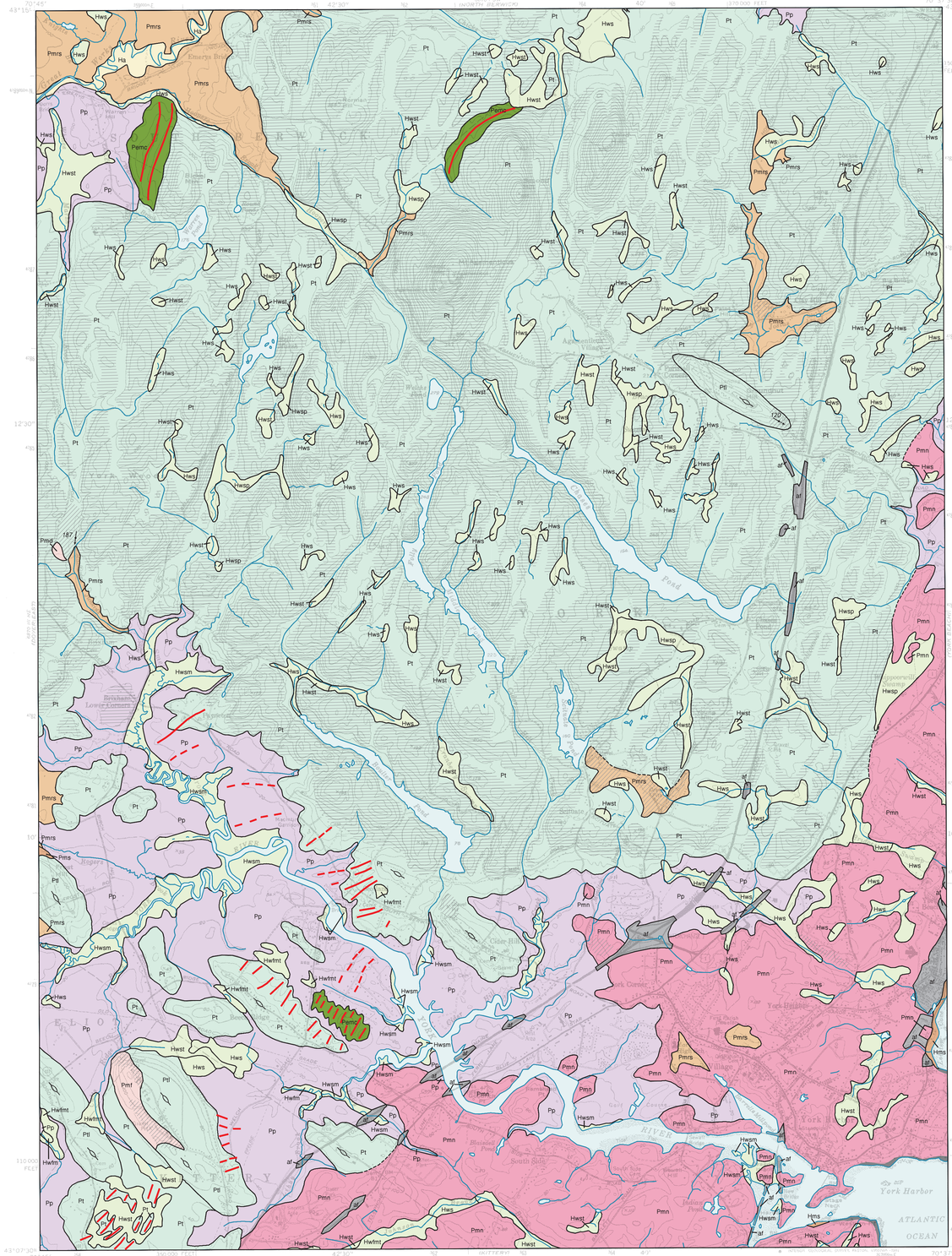
For additional information,
see Open-File Report 99-138.

Surficial Geology



SOURCES OF INFORMATION

Surficial geologic mapping by J. Michael Clinch and Patrick B. O'Toole completed during the 1986 field season; funding for this work provided by the U. S. Geological Survey COGEOMAP program. Wetlands data provided in part by Cornelia C. Cameron, U.S. Geological Survey, 1987. Geologic unit designations and contacts revised and matched to adjacent quadrangles in 1999 by MGS geologists.

Quadrangle Location

SCALE 1 : 24,000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET

TRUE NORTH

Topographic base from U.S. Geological Survey York Harbor quadrangle, scale 1:24,000 using standard U.S. Geological Survey topographic map symbols.

The use of industry, firm, or local government names on this map is for location purposes only and does not impute responsibility for any present or potential effects on the natural resources.

Ha **Stream alluvium** - Sand and gravel deposited on flood plains of modern streams.

Hws **Wetland, swamp*** - Peat, muck, silt, and clay. Poorly drained area with variable tree cover; often has standing water.

Hwfm **Wetland, freshwater marsh*** - Peat, muck, silt, and clay. Poorly drained grassland; often has standing water.

Hwsm **Wetland, salt marsh** - Peat, muck, silt, and clay. Coastal marsh; subject to tidal flooding.

Hms **Marine shoreline deposit (beach)** - Sand and gravel deposited by marine processes along the ocean shore.

Pmn **Marine nearshore deposits** - Thin, discontinuous till, water-laid sediments, and/or wetland deposits overlying bedrock. Occurs in coastal areas where glacial sediments were largely eroded and redeposited during regressive phase of late-glacial marine submergence. Bedrock outcrops are locally abundant.

Pms **Marine shoreline deposit** - Sand and gravel. Consists of beach deposits formed during late-glacial marine submergence.

Pmrs **Marine regressive sand deposits** - Sand deposited in the sea during regressive phase of marine submergence.

Pp **Presumpscot Formation** - Massive to laminated, gray to bluish-gray silt and clay. Weathers to brownish or greenish-gray. Locally may include minor sand and gravel. Occurs as blanket deposit over bedrock and older glacial sediments. Deposited on sea floor during late-glacial marine submergence.

Pmd **Marine delta** - Sand and gravel deposited in the sea at the glacier margin during the marine submergence. Top of delta (prior to excavation) marked approximate position of sea level during deglaciation.

Pmf **Marine fan** - Gravel and sand deposited in a submarine environment at the margin of the late Wisconsinan glacier.

Pemc **End moraine complex** - Cluster of moraine ridges. Composed of till, sand, and gravel deposited at the margin of the late Wisconsinan glacier.

Pt **Till** - Loose, poorly sorted, generally nonstratified mixture of sand, pebbles, cobbles, and boulders. Deposited from glacial ice. Forms a blanket over bedrock. Commonly less than 10 ft (3 m) thick.

Ptl **Lodgement till** - Compact, poorly sorted generally nonstratified mixture of silt, clay, and sand, with pebbles, cobbles, and boulders. Shows prominent fissility near ground surface. Deposited at base of glacial ice sheet.

Bedrock outcrops - Gray areas indicate barren ledge. Ruled pattern indicates areas where surficial sediments are generally less than 10 ft (3 m) thick.

af **Artificial fill** - Composed of till, sand and gravel, rock, or various man-made materials.

Modified terrain - Area where original topography has been greatly modified by excavation.

Contact - Boundary between map units. Dashed where location is very approximate.

Drumlin - Glacially streamlined hill. Symbol shows direction of long axis.

135 **Glacial striation locality** - Arrow shows ice-movement direction inferred from striations (scratches on bedrock caused by glacial abrasion). Dot marks point of observation.

End moraine - Ridge of till or sand and gravel deposited along the margin of the late Wisconsinan glacier. Dashed line indicates inferred moraine beneath cover of Presumpscot Formation.

*NOTE: Wetland symbols followed by "t" indicate areas where peat deposits probably do not constitute a significant commercial resource, either because they are thin (< 1.5 m), or they have an ash content greater than 25 percent. Symbols followed by "p" indicate peat deposits that are thicker (generally > 1.5 m), with ash content less than 25 percent, and thus may be suitable for commercial applications.

USES OF SURFICIAL GEOLOGY MAPS

A surficial geology map shows all the loose materials such as till (commonly called hardpan), sand and gravel, or clay, which overlie solid ledge (bedrock). Bedrock outcrops and areas of abundant bedrock outcrops are shown on the map, but varieties of the bedrock are not distinguished (refer to bedrock geology map). Most of the surficial materials are deposits formed by glacial and deglacial processes during the last stage of continental glaciation, which began about 25,000 years ago. The remainder of the surficial deposits are the products of postglacial geologic processes, such as river floodplains, or are attributed to human activity, such as fill or other land-modifying features.

The map shows the areal distribution of the different types of glacial features, deposits, and landforms as described in the map explanation. Features such as striations and moraines can be used to reconstruct the movement and position of the glacier and its margin, especially as the ice sheet melted. Other ancient features include shorelines and deposits of glacial lakes or the glacial sea, now long gone from the state. This glacial geologic history of the quadrangle is useful to the larger understanding of past earth climate, and how our region of the world underwent recent geologically significant climatic and environmental changes. We may then be able to use this knowledge in anticipation of future similar changes for long-term planning efforts, such as coastal development or waste disposal.

Surficial geology maps are often best used in conjunction with related maps such as surficial materials maps or significant sand and gravel aquifer maps for anyone wanting to know what lies beneath the land surface. For example, these maps may aid in the search for water supplies, or economically important deposits such as sand and gravel for aggregate or clay for bricks or pottery. Environmental issues such as the location of a suitable landfill site or the possible spread of contaminants are directly related to surficial geology. Construction projects such as locating new roads, excavating foundations, or siting new homes may be better planned with a good knowledge of the surficial geology of the site. Refer to the list of related publications below.

OTHER SOURCES OF INFORMATION

1. Clinch, J. M., O'Toole, P. B., 1999, Surficial geology of the York Harbor 7.5-minute quadrangle, York County, Maine: Maine Geological Survey, Open-File Report 99-138, 6 p.
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3. Neil, C. D., 1998, Significant sand and gravel aquifers of the York Harbor quadrangle, Maine: Maine Geological Survey, Open-File Map 98-132.
4. Thompson, W. B., 1979, Surficial geology handbook for coastal Maine: Maine Geological Survey, 68 p. (out of print)
5. Thompson, W. B., and Borns, H. W., Jr., 1985, Surficial geologic map of Maine: Maine Geological Survey, scale 1:500,000.
6. Thompson, W. B., Crossen, K. J., Borns, H. W., Jr., and Andersen, B. G., 1989, Glaciomarine deltas of Maine and their relation to late Pleistocene-Holocene crustal movements, *in* Anderson, W. A., and Borns, H. W., Jr. (eds.), Neotectonics of Maine: Maine Geological Survey, Bulletin 40, p. 43-67.